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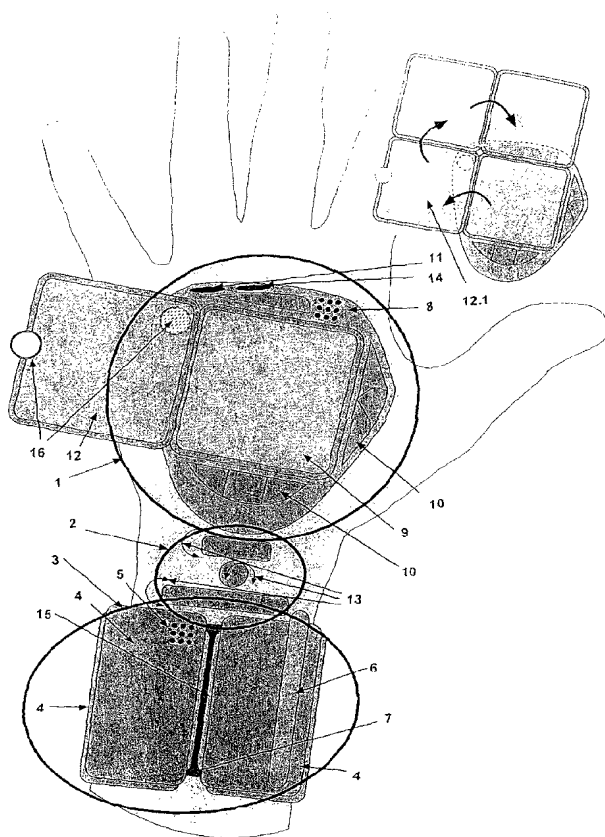
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(54) Title: A MODULAR TELECOMMUNICATION AND PDA UNIT



(57) Abstract: A modular telecommunication and PDA device attached by a strap to the forearm with a modular, exchangeable display-operating unit (1) which sits on the wrist and has a pressure sensitive display allowing for handwriting recognition and keys for operation and interaction between the modules (4) as well as a protective cover with an additional display (12) which can be unfolded and tripled in size (multi-screen) (12.1) and also has a digital camera lens (16) and is attached to the module carrier (3) by way of the spring and rotational parts system (2) which is always allow for enough force facilitating coordinated motion for turning the display-operating unit with the fist and hand joint, i.e. the palm. Various handheld devices - cellular phones, PDA, GPS, digital cameras, bar-code scanners, batteries, and other mobile and handheld devices and those devices which are yet to be created if the possibility and appropriateness of their use in this manner is shown in the manner described in this patent are in the form of modules (4) via the docks (15) attached to the model carrier (3).

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For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

A MODULAR TELECOMMUNICATION AND PDA UNIT

5 **Field of Invention**

This invention relates to the application and manner of using various handheld devices - cell phones, PDAs, GPSs, bar code scanners, batteries and other mobile and handheld devices, as well as those which will be created should their potential usage in this manner appear appropriate. In the field of mobile communications, there is intent to combine various devices (cellular phones, PDAs, personal computers, etc.) into one single device, while also allowing cellular phone users to connect to the Internet and the World Wide Web through Internet development and by way of WAP technology.

15 **Technical Problem**

The problem lies in the fact that displays on WAP cellular phones are too small for user-friendly and efficient use. The use of the keyboard on cellular phones is impractical also, if the interactive quality of the Internet is taken into consideration or if there is any other need for data entry. Furthermore, the problem is also the modularity, combining and connection of various devices, that is, in the practicality of the usage of related, connected devices.

State of the Art

Existing devices and cellular phone prototypes try to solve these problems in such a way that the display and keyboard are placed on the back side of the cellular phone and or are built into the flip cover, creating more room for the display, but, making it less practical - the device is held in one hand while the other hand is used for operation and interaction. Some existing PDA devices have good solutions for the problem of operation and interaction - via a pen, a touch screen display, which is reactive to pressure and handwriting recognition software or through voice recognition, but, they are still impractical because they occupy the hands and create problems with the localization of software for voice recognition.

The above mentioned problems are intensified further when it is attempted to connect one or more devices to the cellular phone or PDA device.

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Description of the Invention

The primary goal of the invention is to improve and simplify communication between user - various WAP cellular phones, PDAs and other handheld devices and the device itself in such a way that the wrist is used as the area on which the display is held.

The secondary goal of the invention is to provide an improved WAP cellular phone, PDA or handheld device.

The further goal of the invention is to provide simpler and more practical linkage, connection and use of various mobile and handheld devices and those which will be created if their usage in this manner is appropriate.

The further goals and advantages of the invention will be shown in part in the description which follows and in part will be discovered in practice.

The modular telecommunication and PDA device attached to the forearm with a modular, exchangeable screen-operating unit on the wrist under this invention covers an interchangeable display-operating unit (display-operating units may differ in design and function) which uses the wrist as the surface on which it lies and which can be used with a pen, i.e. handwriting recognition, and is pressure sensitive. If needed, it has a protective cover which contains an additional display and a camera lens, which can be moved in all directions and angles, a bar code scanner and a cellular phone, so that it can be used also as a hands free cellular phone, Infra-Red port, camera lens which can be turned in all directions and under any angle as well as other necessary keys for the operation of the module, all of which are connected or can be connected - docked - on the module bay. The use of the wrist as the surface on which the display-operating unit rests offers the possibility of a significantly larger display than available on current WAP cellular phone models.

The display is attached to the module bay by a system of springs and rotational parts which always provide enough force to facilitate easy and coordinated movement of display-operating unit and the hand (i.e. fist, wrist and palm).

The module bay is attached to the hand like a watch with a significantly wider band to provide better weight distribution along the forearm. Standardized docks (to facilitate compatibility among modules made by different producers) are located on the band which can take various modules - PDA, cellular phone,

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mp3 player, digital camera, tv/radio receiver, c/b radio/ GPS, modules used by the military and police, modules used by restaurant servers and warehouse clerks and those which will be created if their use is applicable in this manner.

5 Description of Drawings

The accompanying diagrams no. 1 and no. 2 are part of the invention's description. They illustrate the concept of the invention and help explain its basic premise.

1. Display-Operating Unit
- 10 2. System of springs and rotational parts
3. Module carrier with modules and docks i.e. slots or hooks
4. Various modules (battery, PDA, GPS/..)
5. Microphone on the cellular phone module
6. Pen for writing on the display
- 15 7. Module bay strap
8. Speaker (for normal or hands free communication)
9. Display with part for handwriting recognition
10. Control keys
11. Infra-red communication port
- 20 12. Protective cover with camera lens and additional display which can be unfolded into a triple display - multi-screen or video wall (12.1)
13. Rotational directions
14. Bar-code scanner
15. Docks
- 25 16. Digital camera lens

With reference to the accompanying diagram under point (1) is the display-operating unit with the protective cover, which includes the additional display, (12), which can be tripled in size (multi-screen or video-wall, (12.1)), which fits in the palm and is attached to the module carrier, (3), by a system of springs and rotational parts, (2), which provide enough force to facilitate coordinated and easy movement (13) of display-operating unit and the hand (i.e. fist,

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wrist and palm), and is of an appropriate size for interaction between the user and the device, use of video conferencing. Internet or WAP and also can be used with the pen (6) and has handwriting recognition with an option of 4:3 relation among the display parts. In accordance with the invention, when used as a classic cellular phone the speaker (8) is placed on the ear
5 of the user while the microphone (5) is placed close to the mouth.

The modules, (4) are attached by docks (15) found on the band of the module bay (7) which provides fast and easy interchange of existing modules (4) with others or additional new modules and in this manner allows user to personalize device to his or her needs.

10 The innovation facilitates a practical, efficient and effective device which includes significant improvements in comparison to devices of this type currently available. Experts will find that there are many possibilities stemming from this invention for redesign and change to currently available devices of this type, within the limits of the scope and spirit of this invention.

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Patent Claims

1. Modular telecommunication and PDA device is attached to the forearm by means of a modular interchangeable display-operating unit on the wrist, wherein the display operating unit (1) is attached to the wrist.
5
2. Modular telecommunication and PDA device of claim 1 wherein said display-operating unit (1) is connected to a module carrier (3) by means of the system of springs and rotational parts (2).
3. Modular telecommunication and PDA device of claim 1 wherein various handheld devices, namely cellular phones, PDAs, GPSes, digital cameras, bar code scanners, batteries, and other mobile and handheld devices, as well as those devices which will be created if their use is applicable in the manner described, are inserted into appropriate docks (15) in the form of modules (4).
10
4. Modular telecommunication and PDA device of claim 1 wherein on said module carrier (3) are docs (15).
15
5. Modular telecommunication and PDA device of claim 1 wherein said module carrier (3) is attached to the forearm by a wider wrist band, thus giving better weight distribution along the area of the band.
6. Modular telecommunication and PDA device of claim 1 wherein said display (9) is pressure-sensitive, i.e. there is a possibility of software-assisted handwriting recognition.
20
7. Modular telecommunication and PDA device of claim 1 wherein a speaker (8) is on said display-operating unit (1), which enables hands-free or regular mode of telephone communication.
8. Modular telecommunication and PDA device of claim 1 having keys (10) on said display-operating unit (1), in order to manage with said connected modules (4).
25
9. Modular telecommunication and PDA device of claim 1 wherein the digital camera lens (16) is attached to said display-operating unit (1), so the former can be turned in all directions and angles.

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10. Modular telecommunication and PDA device of claim 1 wherein an infra-red (IR) port (11) is on said display-operating unit (1).

11. Modular telecommunication and PDA device of claim 1 wherein a protective cover with an additional display (12) is on said display-operating unit (1).

5 12. Modular telecommunication and PDA device of claim 1 wherein a protective cover is on said display-operating unit (1) with an additional display (12) which can be unfolded thus tripling the size of the display (multi-screen or video wall (12.1)).

13. Modular telecommunication and PDA device of claim 1 wherein a protective cover is on said display-operating unit (1) with an additional display (12) to which the digital camera
10 lens (16) is attached, and can be turned in all directions and angles.

14. Modular telecommunication and PDA device of claim 1 wherein a bar-code scanner (14) is on said display-operating unit (1).

15. Modular telecommunication and PDA device of claim 1 wherein the system of springs and rotational parts (2) provides enough force as to enable coordinated movement of said
15 display-operating unit (1) and the hand (i.e. fist, wrist and palm).

16. Modular telecommunication and PDA device of claim 3 having said docks (15) on the bay standardized, in order to assure compatibility with various modules (4) made by different producers.

17. Modular telecommunication and PDA device according to claims 1, 2 and 6-14,
20 wherein said display-operating unit (1) is exchangeable i.e. the principle of its use is modular - it can be detached and replaced by a second display-operating unit.

18. Modular telecommunication and PDA device according to claims 1, 2, 6-14, and 17, wherein said display-operating unit (1) can be folded back being set above said module carrier.

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A MODULAR TELECOMMUNICATION AND PDA UNIT

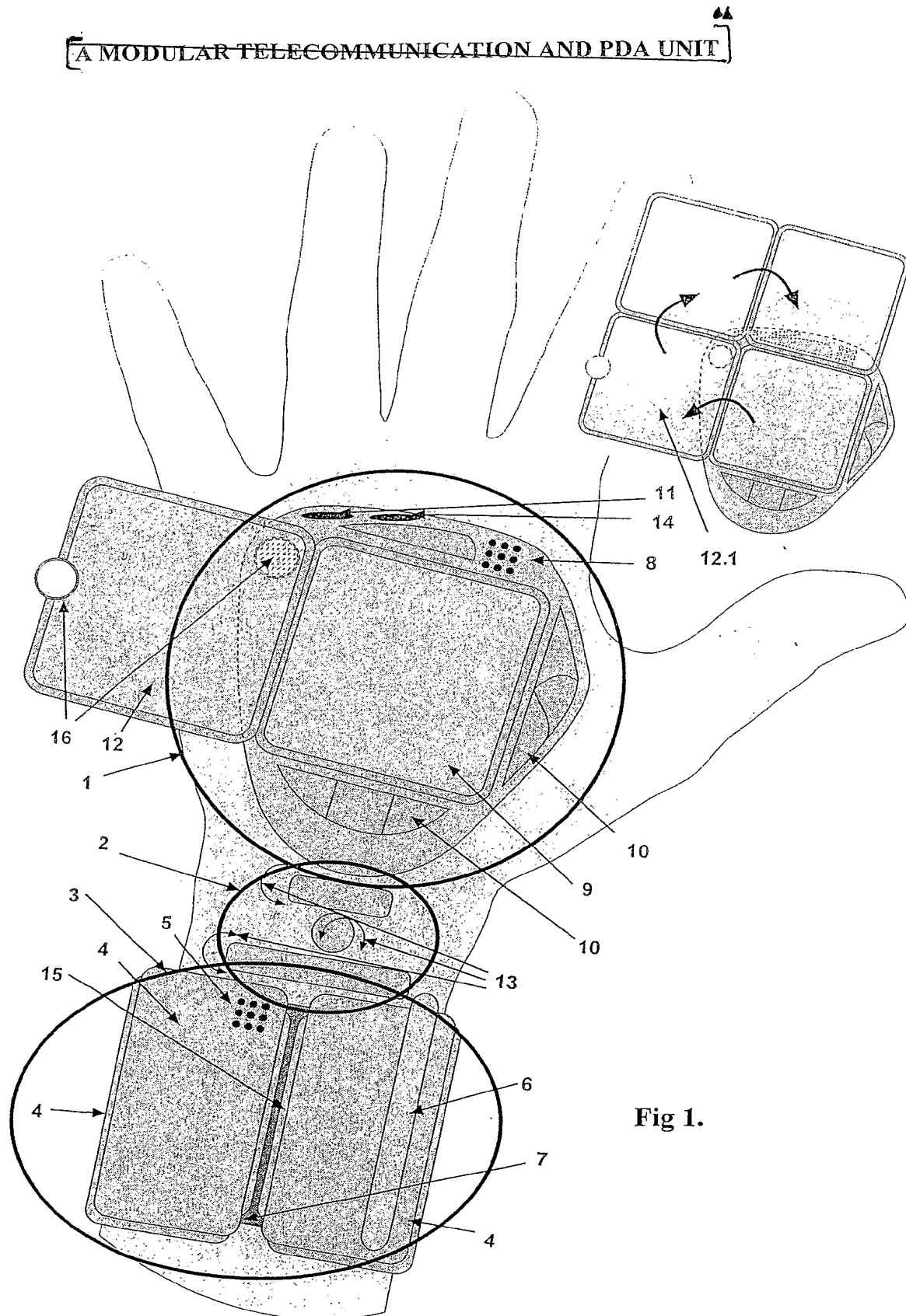


Fig 1.

A MODULAR TELECOMMUNICATION AND PDA UNIT ^{AA}

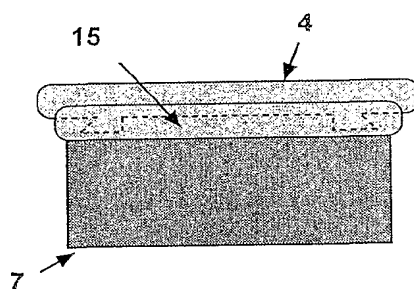


Fig 2